

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

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| IN RE CREDIT DEFAULT SWAPS ANTITRUST  | : |                   |
| LITIGATION                            | : | 13 Md. 2476 (DLC) |
|                                       | : |                   |
| This Document Relates To: All Actions | : |                   |
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**DECLARATION OF DARRELL DUFFIE IN SUPPORT OF PLAINTIFFS’ MOTION  
FOR PRELIMINARY APPROVAL OF SETTLEMENT WITH ALL DEFENDANTS  
AND PRELIMINARY CERTIFICATION OF A SETTLEMENT CLASS**

I, Darrell Duffie, hereby declare as follows:

1. Counsel for the plaintiff class in the above-captioned matter retained me in late 2014 as a testifying expert in *In re Credit Default Swaps Antitrust Litigation*, No. 13 MD 2476 (DLC) (S.D.N.Y.). I submit this declaration to explain why, in my view, this case was important; how its aggressive advancement and the publication of the proposed settlement has fostered beneficial changes in the Credit Default Swap (“CDS”) market; and the relevance of the behavioral remedies agreed to by Defendant International Swaps and Derivatives Association (“ISDA”) as part of the proposed settlement of this action.

**Background**

2. I am the Dean Witter Distinguished Professor of Finance at the Graduate School of Business, Stanford University, and Professor by Courtesy, Department of Economics, Stanford University. A substantial focus of my research, teaching, and policy-related work is the market for CDS, and more generally how alternative market structures and developments affect the CDS market.

3. In addition to a wide range of consulting work performed for regulators and market participants, I have written research papers, policy reports, and books that address CDS markets, swap markets, and the central clearing of swaps. My most recent books are: *Dark Markets: Asset Pricing and Information Transmission in Over-the-Counter Markets* (Princeton University Press, 2012), *Measuring Corporate Default Risk* (Oxford University Press, 2011) and *How Big Banks Fail* (Princeton University Press, 2010).

4. Among other appointments and activities, I serve on the Financial Advisory Roundtable of the Federal Reserve Bank of New York. I was elected the 2009 President of the American Finance Association, the leading U.S. and international academic organization of financial economists. In 2013-2014, I chaired the Market Participants Group (MPG), charged by the Financial Stability Board with recommending reforms to LIBOR, EURIBOR, and other interest-rate benchmarks used in over-the-counter swap markets.

5. My CV, which includes other relevant qualifications, is attached as Appendix A.

6. In this action, I analyzed the viability of CDS exchange trading in or around 2008 and the predominance of common issues and injury among class members in this action. In connection with my work, I examined, among other materials, hundreds of documents produced by Defendants and third parties, as well as dozens of deposition transcripts of current and former employees of Defendants and third parties.

#### **Exchange Trading of CDS**

7. I have written extensively about the migration of CDS from the over-the-counter (“OTC”) market to electronic and exchange trading and have long publicly stated that exchange trading would result in increased price transparency, more efficient pricing, and enhanced competition among dealers, and would thereby improve the efficiency of the CDS market.

8. Because this action sought to address the historical lack of price transparency and competition in the CDS market, I agreed to serve as an expert witness for the plaintiff class. Indeed, I believe that this action, and the aggressive manner in which the counsel for Plaintiffs have litigated it, has spurred important beneficial changes in the CDS market.

9. As a notable example, on August 31, shortly after I became aware that Plaintiffs and Defendants had reached a preliminary agreement to settle this case, the Intercontinental Exchange (“ICE”) announced that it plans to begin offering an anonymous, all-to-all trading platform for single-name CDS.<sup>1</sup> This platform was described as “exchange-like” and will feature many of the beneficial aspects of exchange trading that I have identified in my published works and describe above.<sup>2</sup>

10. That ICE has now announced an anonymous, all-to-all exchange trading platform—a transparent platform that Plaintiffs alleged in this action to have been blocked by Defendants—is a remarkable shift that I attribute, in part, to this litigation and its favorable resolution.

11. It is also my opinion that the licensing and related changes agreed to by ISDA as part of the proposed settlement will improve the CDS marketplace and benefit class members.

12. ISDA owns certain intellectual property, including the rights to the settlement prices generated by CDS auctions administered by ISDA (the “Final Price”), that are necessary for the operation of a viable CDS exchange trading platform. Plaintiffs alleged that ISDA, in collusion with Defendants, refused to grant such licenses to any exchange trading platforms. The changes to its licensing practices that ISDA has now agreed to adopt under the proposed

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<sup>1</sup> See Mike Kentz, *ICE plans single-name CDS platform*, Reuters (Aug. 31, 2015), <http://www.reuters.com/article/2015/08/31/markets-derivatives-cds-idUKL1N1161A520150831>.

<sup>2</sup> *Id.*

settlement will make it much easier for parties to license ISDA's intellectual property for the exchange trading of CDS.

13. ISDA has also agreed to a number of measures that will make its licensing process more transparent and inclusive of class members. For example, as part of the proposed settlement, ISDA will ensure that its licensing decisions are made by a committee with equal buy-side representation. In addition, ISDA has agreed to broadcast its licensing meetings to the public via the internet and to publish licensing decisions related to CDS on its website, unless a proposed licensee objects. These measures should help ensure that ISDA's licensing process is fair and transparent.

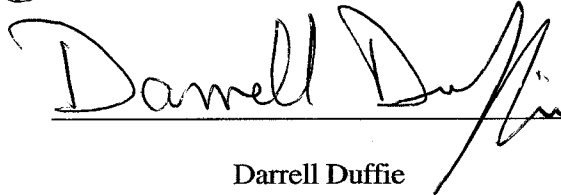
14. Finally, ISDA has agreed to formally consider and vote on a proposal to make an official statement discouraging the post-trade disclosure of the identities of the counterparties to a CDS transaction—what is termed “name give-up”—and to support the implementation of Commodity Futures Trading Commission (“CFTC”) guidance related to the elimination of or placement of limitations on name give-up.<sup>3</sup>

15. I consider these and other terms of the proposed settlement agreement to be important changes that should make the CDS market more transparent, efficient, and competitive, and thereby benefit class members.

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<sup>3</sup> Anonymity is a critical component of exchange trading platforms because it allows entities to transact without disclosing their trading strategies to the wider market. The practice of name give-up, accordingly, deters buy-side firms from trading on platforms with exchange-like features. The elimination of the practice of name give-up would thus, in my view, significantly increase incentives for participation on new or existing CDS trading platforms with exchange-like features.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on this 13<sup>TH</sup> date of October, 2015, at Lausanne, Switzerland.

  
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Darrell Duffie

# **APPENDIX A**

## Curriculum Vitae of DARRELL DUFFIE

*Contact:*

fax: 650-725-7979

email: duffie@stanford.edu

webpage: <http://www.stanford.edu/~duffie/>*Postal Address:*

Graduate School of Business

Knight Way

Stanford University

Stanford CA 94305-7298

UNIVERSITY  
EDUCATION

Stanford University, Ph. D. (Engineering Economic Systems) (1984)

University of New England (Australia), Master of Economics (Economic Statistics) (1980)

University of New Brunswick (Canada), Bachelors of Science in Engineering (Civil Engineering) (1975)

AWARDS  
AND  
HONORS

1985-86 NSF Research Fellowship

1988-89 Batterymarch Fellowship

1990-92 NSF Research Grant

1992-93 Catalyst Institute Research Grant

1994-95 Q Group Research Award

1994-96 NSF Research Grant

Fellow, Econometric Society

1997, Smith-Breeden Distinguished Paper Prize, *Journal of Finance*2001, Graham and Dodd Award, *Financial Analysts Journal*

2002, NYSE Prize for equity research, Western Finance Association

2003, Distinguished teacher award, Doctoral Program, Graduate School of Business, Stanford University

2003, Financial Engineer of the Year, International Association of Financial Engineering

2004, Clarendon Lectures in Finance, Oxford University.

2007, Princeton Lectures in Finance.

2007, Elected Fellow of the American Academy of Arts and Sciences.

2008, 2011, Elected to the Council of the Econometric Society.

2008, Nash Lecture, Carnegie-Mellon University.

2009, Elected President of the American Finance Association.

2010, Tinbergen Institute Finance Lectures, Duisenberg Institute.

2011, Minerva Foundation Lectures, Columbia University.

## EMPLOYMENT

*1984-present:* Graduate School of Business, Stanford University*Current Position:* Dean Witter Distinguished Professor of Finance*On leave:* Mathematical Sciences Research Institute, University of California, Berkeley; 1985-1986; Université de Paris, Dauphine; 1998. University of Lausanne; 2007-2008.RESEARCH  
INTERESTS

Incomplete security markets; derivative security markets; market and credit risk management of banks and other financial institutions; asset pricing theory; preference theory under uncertainty, financial market innovation and security design; interest-rate modeling and fixed-income security pricing; options and other derivative security markets; credit risk; over-the-counter markets; financial market infrastructure, central banking.

## BOOKS

- Security Markets: Stochastic Models*, Boston: Academic Press, 1988.
- Futures Markets*, Englewood Cliffs, New Jersey: Prentice-Hall, 1989. Japanese translation, Kinzai Publishing Company, 1994; Chinese translation, 1996.
- Dynamic Asset Pricing Theory*, Princeton University Press, 1992; Third Edition, 2001; French Translation, *Modèles Dynamiques d' Evaluation*, Paris: Presse Universitaire Française, 1993; Japanese Translation, Shinbun Press, 1998; portions appearing in Italian translation in *Il Principio di Arbitraggio*, edited by M. de Felice and E. F. Moriconi, Società Editrice Il Mulino, Bologna, 1996.
- Credit Risk: Pricing, Measurement, and Management*, with Kenneth J. Singleton, Princeton University Press, 2003.
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- Measuring Corporate Default Risk*, Oxford University Press, 2011.
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RESEARCH  
PUBLICATIONS

- “Implementing Arrow-Debreu Equilibria by Continuous Trading of Few Long-Lived Securities,” (with Chi-fu Huang), *Econometrica*, vol. 53 (1985), pp. 1337-1356, forthcoming in reprinted form in *Continuous-Time Finance*, edited by Stephen Schaefer, London: Edward Elgar, 2000.
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- “Stochastic Equilibria: Existence, Spanning Number, and the ‘No Expected Financial Gains From Trade’ Hypothesis,” *Econometrica*, vol. 54 (1986), pp. 1161-1184.
- “Predictable Representation of Martingale Spaces and Changes of Probability Measure,” *Séminaires de Probabilité XIX*, edited by J. Azéma and M. Yor, *Lecture Notes in Mathematics Number 1123*, (1985) Springer-Verlag: Berlin, pp. 278-285.
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- “Stochastic Equilibria with Incomplete Financial Markets”, *Journal of Economic Theory*, vol. 41 (1987), pp. 405-416. Corrigendum, vol. 49 (1989), p. 384.
- “Equilibrium in Incomplete Markets: I. A Basic Model of Generic Existence” (with Wayne Shafer), *Journal of Mathematical Economics*, vol. 13 (1985), pp. 285-300, forthcoming in reprinted form in *General Equilibrium Theory*, edited by Gérard Debreu, Edward Elgar Publishing, Cheltenham, England.



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“Equilibrium and The Role of the Firm in Incomplete Markets” (with Wayne Shafer), Graduate School of Business, Stanford University, August, 1986.

“A Liquidity-Based Model of Asset-Backed Security Design” (with Peter DeMarzo), Working Paper, Kellogg Graduate School of Management, Northwestern University, November, 1993.

“Asymptotic Efficiency of Hansen-Scheinkman and Resolvent Estimators of Ornstein-Uhlenbeck Processes,” (with Qiang Dai and Peter Glynn), Working Paper, Graduate School of Business, Stanford University, 1997.

“First-to-Default Valuation,” Working Paper, Université de Paris, Dauphine, and Graduate School of Business, Stanford University, 1998.

“Defaultable Term Structure Models with Fractional Recovery of Par,” Working Paper, Graduate School of Business, Stanford University, 1998.

“Simulating Correlated Defaults,” (with Ken Singleton), Working Paper, Graduate School of Business, Stanford University, 1998.

“Reforming Money Market Funds,” January, 2011, The Squam Lake Group.

“On the Clearing of Foreign Exchange Derivatives,” Graduate School of Business, Stanford University, May 2011. Comment on U.S. Treasury, “Determination of Foreign Exchange Swaps and Foreign Exchange Forwards under the Commodity Exchange Act,” April, 2011.

“Market Making Under the Proposed Volcker Rule,” a report to the Securities Industry and Financial Markets Association and a submission to the Office of the Comptroller of the Currency, the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, and the Securities and Exchange Commission, January, 2012, Graduate School of Business, Stanford University.

“A Sampling-Window Approach to Transactions-Based Libor Fixing” (with David Skeie and James Vickery), Federal Reserve Bank of New York Staff Report Number 513, February 2013.

“Dynamic Directed Random Matching” (with Lei Qiao and Yeneng Sun), Working Paper, Graduate School of Business, Stanford University, June, 2014.



“Benchmarks in Search Markets” (with Piotr Dworczak and Haoxiang Zhu), Working Paper, Graduate School of Business, Stanford University, October, 2014.

“Reforming LIBOR and Other Financial-Market Benchmarks” (with Jeremy Stein), Working Paper, Graduate School of Business, Stanford University, September 2014.

“Market Participants Group on Reforming Interest Rate Benchmarks, Final Report” (with the Market Participants Group), Financial Stability Board, March 2014.

“Robust Benchmark Design” (with Piotr Dworczak), Working Paper, Graduate School of Business, Stanford University, September, 2014.

#### EDITORIAL

*Management Science*, May 1986 to March, 1989.

*Journal of Mathematical Economics*, July, 1988 to February, 1996.

#### BOARDS

*Advances in Futures and Options Research*, May, 1989 to May 1991.

*Annals of Applied Probability*, September, 1989 to May, 1994.

*Economic Theory*, December, 1989 to February, 1996.

*Journal of Economic Theory*, 1986 to 1999.

*Mathematical Finance*, October, 1989 to January, 2001.

*Econometrica*, July, 1990 to July, 2014.

*Asia Pacific Financial Markets*, August 1993 to 2006.

*The Review of Derivatives Research*, December, 1993 to 2007.

*Finance and Stochastics*, 1995 to 2002 (co-editor, 1998-2002).

*Review of Finance*, July, 1995 to 2012.

*Journal of Computational Finance*, February, 1997 to present.

*Advances in Mathematical Economics*, August, 1998 to present.

*Stochastic Processes and Their Applications*, July, 1999 to April, 2006.

*Journal of Financial Economics*. November, 2001 to present.

*Journal of Bond Trading and Management*. 2002 to 2003.

*Journal of Banking and Finance*. November, 2005, to 2008.

*Mathematics and Financial Economics*. April, 2007, to present.

*AEJ: Microeconomics*. May, 2007, to present.

*International Journal of Central Banking*. January, 2009, to present.

*Stochastic Systems*. January, 2009, to present.

*Review of Asset Pricing Studies*. June, 2010, to June 2014.

#### PROFESSIONAL

Council, Bachelier Society, 1996 to 1999.

International Association of Financial Engineers, Governing Board (1997 to 2000), Senior Fellow from 2005.

#### SERVICE

External Advisory Board, Institute for Computational Finance, University of Texas, Austin, 1996 to 2005.

Co-Director and Co-Developer, Stanford University Graduate School of Business Executive Education Courses on Market and Credit Risk for Financial Institutions, 1996 to 2005.

International Advisory Board, Centre for Financial Engineering, National University of Singapore.

Advisory Board, Financial Strategies Group, Graduate School of International Business Strategy, Hitotsubashi University, Tokyo, Japan.

Econometric Society, Fellow, Member of Council (2009-2012), Investments Committee (2009-present).

National Bureau of Economic Research, Research Associate.  
 International Examinations Committee, The Association of Certified International Investment Analysts, Japan.  
 NCCR FinRisk, International Scientific Council, Switzerland; 2005-2012.  
 Organizing Committee, Quantitative Developments in Finance, Newton Institute, Cambridge University, 2005.  
 American Finance Association, Executive Committee, 2007-2011; Vice-President, 2007-2008; President-Elect, 2008-2009; President, 2009-2010; Board of Directors, 2000-2003, 2007-2011.  
 Banff International Research Station, Scientific Advisory Board, 2005 to 2010.  
 The Chicago Mercantile Exchange-Mathematical Sciences Research Institute Prize Committee, 2005 to 2011.  
 The Federal Reserve Bank of New York, Financial Advisory Roundtable, 2006 to present.  
 Financial Economists Roundtable, 2007 to present.  
 Pacific Institute of Mathematical Sciences, Board of Directors, 2007 to present.  
 Stanford University, Working Group on Global Markets, Member, 2008 to present.  
 Squam Lake Working Group, Member, 2008 to present.  
 Stanford Institute of Economic Policy Research (SIEPR), Senior Fellow, 2009 to present.  
 Society of Financial Econometrics (SoFiE), Council, 2009 to present.  
 Swiss Finance Institute, Scientific Council, 2010 to present.  
 Duisenberg Institute, Scientific Council, 2010 to present.  
 Initiative on Global Markets (IGM), University of Chicago, Experts Panel, 2010-present.  
 Stanford University, Financial Institution Resolution Group, 2009-present.  
 SWIFT Institute Advisory Council, 2012-present.  
 American Academy of Arts and Sciences, Fellow, and fellows nominating committee, 2010-present.  
 Stanford University, Financial and Risk Modeling Institute, Co-director, 2012-present.  
 Asian Bureau of Finance and Economics Research, Senior Academic Fellow.  
 Bureau of Finance and Economics Research, Senior Academic Fellow.  
 Member, World Economic Forum Global Agenda Council on the Global Financial System.  
 World Economic Forum, The Role of Financial Services in Society, Steering Committee.  
 Market Participants Group on Reference Rate Reform (chair), August 2013-present.  
 P.R.I.M.E. Finance Foundation, Panel of Recognized International Market Experts in Finance. December, 2013-present.  
 Institute for Global Finance, University of New South Wales, Senior Fellow.

CORPORATE  
BOARDS

iShares Funds and Trusts, San Francisco, 2008-2011.  
 Moody's Corporation, New York, October 2008 to present.

OTHER

Bank One and I.R.S., Chicago (expert testimony, valuation of swaps).  
 Board of Directors, Affinium Fund, London.

COMPENSATED

International Monetary Fund, Washington, D.C. (credit risk).  
 Citigroup, New York (economic capital).

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|------------|---|
| ACTIVITIES | <p>Merrill Lynch, New York (risk management).</p> <p>Paloma Partners, Greenwich CT (risk management).</p>   |
| 2003-2014  | <p>Ixis, Paris (credit markets).</p> <p>Schering-Plough, Kenilworth NJ (asset valuation).</p> <p>MBIA, New York (credit risk management).</p> <p>Bombardier, Toronto (corporate debt valuation).</p> <p>Moody's, Academic Research and Advisory Committee, New York.</p> <p>Credit Suisse, New York (financial markets and risk management), New York.</p> <p>Quinn Emanuel, New York, (consulting and expert witness testimony, credit risk corporate debt valuation, credit derivatives).</p> <p>New York State Tax Authority (repurchase agreements), New York.</p> <p>Cantor Fitzgerald (inter-dealer broker markets), New York.</p> <p>Independent Health Care Trusts for UAW Retirees of General Motors Corporation and of Ford Motor Corporation, (exercise of equity options), Detroit.</p> <p>State Street Bank (speech to investor conference), Boston.</p> <p>PayNet Inc. (estimation of default probabilities), Chicago.</p> <p>Matterhorn Investment Management (global capital markets), London.</p> <p>Cantor Fitzgerald (interdealer brokerage of treasuries), New York.</p> <p>Public Prosecutor of Milan (valuation of swap agreements), Milan Italy.</p> <p>Federal Reserve Bank of Chicago (central clearing counterparties), Chicago.</p> <p>Kepos Capital (academic advisory board), New York.</p> <p>Lehman Estate (consultation on bankruptcy-related issues), New York.</p> <p>Incisive Media (public speaking).</p> <p>Rothwell, Figg, Ernst &amp; Manbeck (consultation on intellectual property rights), Washington DC,</p> <p>Sansome Capital (consultation on global capital markets), San Francisco.</p> |

This curriculum vitae is current as of December, 2014.